CLAIMS

THE EMBODIMENTS OF THE PRESENT INVENTION, IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED, ARE DEFINED AS FOLLOWS:

1. A push-back storage system comprising:

- an elongated storing lane defining opposite front and rear ends;
- at least one pair of spaced-apart parallel elongated rails extending between said front and rear ends of said storing lane and being inclined downwardly from said rear end towards said front end, each said rail comprising a pair of elongated inclined side walls integrally linked at a common elongated top edge; and
- at least one cart rollably carried by said pair of rails and rollable along said pair of rails between said storing lane front and rear ends, said cart comprising a load-bearing frame rollably carrying a number of wheels each engaging a corresponding one of said rails, each said wheel comprising a web rotatable about a rotational axis and a pair of side flanges radially extending from and axially spaced-apart along said wheel web so as to define a rail-engaging surface on said wheel web between said spaced-apart side flanges, said web rail-engaging surface being wider than said top edge of said corresponding rail so as to allow a low-friction rolling engagement between said wheel web and said rail top edge.

2. A push-back storage system as defined in claim 1, wherein said side flanges of each one of said wheels are inclined so as to form a divergent peripheral channel in said wheel with said wheel web, so as to accommodate said inclined side walls of the corresponding

said rail, with a play existing between said inclined side walls of said corresponding rail and said wheel side flanges in at least one position of said wheel when it engages said corresponding rail.

3. A push-back storage system as defined in claim 2, wherein each said rail has a diamond-shaped cross-section.

4. A push-back storage system as defined in claim 2, wherein said frame of said at least one cart is U-shaped and defines a pair of spaced-apart longitudinal girders integrally linked by a front cross-bar at one extremity of said girders.

5. A push-back storage system as defined in claim 2, further comprising a second cart in addition to said at least one cart, said second cart being rollably carried by said pair of rails and rollable along said pair of rails between said storing lane front and rear ends, said second cart comprising:

a load-bearing frame rollably carrying a number of wheels each engaging a corresponding one of said rails, each said wheel comprising a web rotatable about a rotational axis and a pair of side flanges radially extending from and axially spaced-apart along said wheel web so as to define a rail-engaging surface on said wheel web between said spaced-apart side flanges, said web rail-engaging surface being wider than said top edge of said corresponding rail so as to allow a low-friction rolling engagement between said wheel web and said rail top edge;

wherein at least one wheel of said second cart engages one of said rails between two wheels of said at least one cart, and wherein said load-bearing frame of said second cart extends vertically lower than said load-bearing frame of said first cart.

6. A push-back storage system as defined in claim 2, further comprising a stop member at said storing lane front end for abutment of said at least one cart thereon when said at least one cart is at said storing lane front end for preventing said at least one cart from rolling beyond said storing lane front end.

7. A push-back storage system comprising:

- an elongated storing lane defining opposite front and rear ends;

- a first pair of spaced-apart parallel elongated rails extending between said front and rear ends of said storing lane and being downwardly inclined from said rear end towards said front end, and a second pair of spaced-apart parallel elongated rails extending parallel to said first pair of rails between a first position at said front end of said storing lane and a second position located away from said front end towards said rear end of said storing lane, said second pair of rails being downwardly inclined from said second position towards said first position, each said rail of said first and second pairs of rails comprising a pair of elongated inclined side walls integrally linked at a common elongated top edge; and

- a first cart rollably carried by said first pair of rails and rollable along said first pair of rails between said storing lane front and rear ends, and a second cart carried by said second pair of rails and rollable along said second pair of rails between said first and second positions, each one of said first and second carts comprising a load-bearing frame rollably

carrying a number of wheels each engaging a corresponding one of said rails, each said wheel comprising a web rotatable about a rotational axis and a pair of side flanges radially extending from and axially spaced-apart along said wheel web so as to define a rail-engaging surface on said wheel web between said spaced-apart side flanges, said web rail-engaging surface being wider than said top edge of said corresponding rail so as to allow a low-friction rolling engagement between said wheel web and said rail top edge;

wherein said first pair of rails is located between said second pair of rails, with said load-bearing frame of said first cart extending vertically higher than said load-bearing frame of said second cart when said first and second carts respectively engage said first and second pairs of rails.

8. A push-back storage system as defined in claim 7, wherein said side flanges of each one of said wheels are inclined so as to form a divergent peripheral channel in said wheel with said wheel web, so as to accommodate said inclined side walls of the corresponding said rail, with a play existing between said inclined side walls of said corresponding rail and said wheel side flanges in at least one position of said wheel when it engages said corresponding rail.

9. A push-back storage system as defined in claim 8, wherein said first pair of rails is vertically higher than said second pair of rails at any given longitudinal position in said storing lane.

10. A push-back storage system as defined in claim 9, wherein said load-bearing frame of each of said first and second carts is U-shaped and defines a pair of spaced-apart longitudinal girders integrally linked by a front cross-bar at one extremity of said girders.

11. A push-back storage system as defined in claim 10, further comprising a third cart rollably carried by said first pair of rails and rollable along said first pair of rails between said storing lane front and rear ends, and a fourth cart rollably carried by said second pair of rails and rollable along said second pair of rails between said first and second position, each one of said third and fourth carts comprising:

a load-bearing frame rollably carrying a number of wheels each engaging a corresponding one of said rails, each said wheel comprising a web rotatable about a rotational axis and a pair of side flanges radially extending from and axially spaced-apart along said wheel web so as to define a rail-engaging surface on said wheel web between said spaced-apart side flanges, said web rail-engaging surface being wider than said top edge of said corresponding rail so as to allow a low-friction rolling engagement between said wheel web and said rail top edge;

wherein at least one wheel of said third cart engages a corresponding one of said rails between two wheels of said first cart and at least one wheel of said fourth cart engages a corresponding one of said rails between two wheels of said second cart, with said load-bearing frame of said second cart extending vertically higher than said load-bearing frame of said third cart and with said load-bearing frame of said third cart extending vertically higher than said load-bearing frame of said fourth cart when said first, second, third and fourth carts respectively engage said first and second pairs of rails.

12. A push-back storage system as defined in claim 11, wherein each one of said first, second, third and fourth carts defines front and rear cart end portions and comprises a front pair of said wheels located at said front cart end and a rear pair of said wheels located at said rear cart end, with said front pair of said wheels of said third cart engaging said first pair of rails between said front and rear pairs of said wheels of said first cart, and with said front pair of said wheels of said fourth cart engaging said second pair of rails between said front and rear pairs of said wheels of said second cart.

13. A push-back storage system as defined in claim 12, wherein said second and third carts comprise respective co-operating abutment members integrally attached to their respective said load-bearing frames, said co-operating abutment members abutting against each other and preventing displacement of said second cart relative to said third cart before said second cart front cart end portion moves rearwardly beyond said third cart rear cart end portion along said storing lane.

14. A push-back storage system as defined in claim 13, further comprising a stop member at said storing lane front end for abutment of at least one of said first, second, third and fourth carts thereon when said at least one of said first, second, third and fourth carts is at said storing lane front end for preventing said first, second, third and fourth carts from rolling beyond said storing lane front end.

15. A push-back storage system comprising a number of storing lanes each defining opposite front and rear ends and each comprising:

- a number of pairs of spaced-apart parallel elongated rails extending between said front and rear ends of said storing lane and downwardly inclined from said rear end towards said front end, said pairs of rails being arranged successively from a narrower pair to a wider pair of concentric pairs of rails, each said rail of said pairs of rails comprising a pair of elongated inclined side walls integrally linked at a common elongated top edge; and

- a number of carts each rollably carried by a corresponding said pair of rails and rollable along said corresponding pair of rails between said storing lane front and rear ends, each said cart comprising a load-bearing frame rollably carrying a number of wheels each engaging a corresponding one of said rails, each said wheel comprising a web rotatable about a rotational axis and a pair of side flanges radially extending from and axially spaced-apart along said wheel web so as to define a rail-engaging surface on said wheel web between said spaced-apart side flanges, said web rail-engaging surface being wider than said top edge of said corresponding rail so as to allow a low-friction rolling engagement between said wheel web and said rail top edge;

wherein said load-bearing frames of said carts being are vertically offset relative to each other when they engage their said corresponding pairs of rails.

16. A push-back storage system as defined in claim 15, wherein said side flanges of each one of said wheels are inclined so as to form a divergent peripheral channel in said wheel with said wheel web, so as to accommodate said inclined side walls of the corresponding said rail, with a play existing between said inclined side walls of said corresponding rail and said

wheel side flanges in at least one position of said wheel when it engages said corresponding rail.